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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,205	10/06/2000	Jack H. Hetherington	PIE-10102/29	2529

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EXAMINER

NGUYEN, JIMMY H

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 11/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/684,205	HETHERINGTON, JACK H. <i>(Signature)</i>
	Examiner	Art Unit
	Jimmy H. Nguyen	2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 06 October 2000.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-7 and 10-17 is/are rejected.
- 7) Claim(s) 8 and 9 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892) / 4) Interview Summary (PTO-413) Paper No(s). _____.
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) / 5) Notice of Informal Patent Application (PTO-152)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) Other: _____

DETAILED ACTION

1. This Office Action is made in response to applicant's papers filed on 10/06/2000. Claims 1-17 are currently pending in the application. An action follows below:

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 01/29/2001 and entered as paper No. 2 is considered by the examiner.

Specification

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

- (e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the

applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a

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separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

- (k) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

In the instant case, "We claim" must be on the first line of page 23 instead of page 22.

See MPEP § 608.01(m).

Drawings

3. The drawings are objected to because figure 5B is missing in the application, see specification, page 13, lines 4-5. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: there is no reference sign in figure 1B. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 1 and 11 are objected to under 37 CFR 1.75(a) because although these claims meet the requirement 112/2d, i.e., the metes and bounds are determinable, however, the features, "user position" (see claim 1, lines 11 and 14) should be changed to -- the position of said

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elongated member --, and “user position” (see claim 11, lines 14 and 17) should be changed to -
- the position of said joystick lever --, in accordance with the disclosure, see specification, page
11, lines 9-11.

6. Claims 8 and 9 are objected to under 37 CFR 1.75(a) because although this claim meets the requirement 112/2d, i.e., the metes and bounds are determinable, however, “stationary signal detecting capacitor”, “stationary signal transmitting capacitor plate”, “dielectric element”, “elongate member” and “a user” should be respectively changed to -- second stationary signal detecting capacitor --, -- second stationary signal transmitting capacitor plate --, -- second dielectric element --, -- second elongate member --, and -- said second elongated members --, so as to make them to be distinct from the features recited in independent claim 1 and to be consistent with the disclosure, see specification, page 11, lines 9-11.

7. Claim 16 is objected to under 37 CFR 1.75(a) because although this claim meets the requirement 112/2d, i.e., the metes and bounds are determinable, however, “including” (see claim 15, line 1) should be changed to -- said plurality of electrically separated segments includes --, in accordance with the disclosure, see fig. 1A.

It is in the best interest of the patent community that applicant, in his/her normal review and/or rewriting of the claims, to take into consideration these editorial situations and make changes as necessary.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 5-7, 10-12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al. (USPN: 5,576,704, cited in IDS filed on 01/29/2001), hereinafter Baker, and further in view of Rohr (USPN: 4,864,295, cited in IDS filed on 01/29/2001).

As per claims 1, 3, 5, 11 and 14, Baker discloses a capacitive joystick (a capacitive joystick apparatus 100 as shown in fig. 1) configured for interconnection to a utilization device (a work machine, see fig. 11, col. 1, lines 11-36), the joystick comprising a housing (see fig. 1) and a capacitive position sensor (see fig. 5) including a metal plate (340) (corresponding to the claimed signal detecting capacitor plate), a metal plate (360) (corresponding to the claimed signal transmitting capacitor plate), a dielectric plate (350) (corresponding to the claimed dielectric element), a control shaft (107) (corresponding to the claimed elongated member or user graspable joystick lever), an electronic circuitry (see fig. 8, col. 4, line 16 through col. 5, line 33) (corresponding to the claimed circuitry), and an output for outputting the amount rotation of the control shaft to the control means (805) (i.e., the utilization device, see fig. 11). Baker further discloses the metal plate (340) is rotatable in a plane substantially parallel to the metal plate (360) and the dielectric plate (350) (col. 3, line 54 through col. 4, line 15). Accordingly, Baker discloses the claimed subject matter except that instead of the metal plate (340), the dielectric plate is rotatable, and the metal plate (360) is divided into a plurality of electrically separated segments, as claimed.

However, Rohr discloses a related capacitive device for sensing the rotary position of a rotating shaft, the capacitive device (see fig. 1) comprising a stationary capacitance plate member (13) (corresponding to the claimed stationary signal detecting capacitor plate), a

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stationary capacitance plate member (12) (corresponding to the claimed stationary signal transmitting capacitor plate) and a dielectric member (14) (corresponding to the claimed dielectric element) and a shaft (10) coupled to the dielectric member to cause the dielectric member (14) rotatable in a plane substantially parallel to the stationary plates (12 and 14) without translation. Rohr further teaches that the stationary capacitance plate member (12) is divided into a plurality of electrically separated segments (12A-12D).

It would have been obvious to a person of ordinary skill in the art to utilize Rohr's teachings, i.e., the dielectric member rotatable in a plane substantially parallel to the stationary plates without translation and the stationary signal transmitting plate divided into a plurality of electrically separated segments, in the joystick device of Baker because this would produce a capacitive joystick device having a better linearity and being insensitive to radial motions of the rotary shaft, thereby obtaining high precision measurement applications, as taught by Rohr (col. 2, lines 1-2 and lines 24-29). Therefore, it would have been obvious to combine Rohr with Baker to obtain the invention as specified in claims above.

As per claims 2 and 12, Official Notice is taken that the joystick configured for interconnection to a computer is well known and expected in the art, because this would allow the user to control the cursor on the display or to navigate through a graphical user interface, in a natural manner. Therefore, it would have been obvious to recognize that Baker in view of Rohr obviously discloses the invention as specified in claims above.

Regarding to claims 6, 7 and 15-17, Rohr further discloses four arcuate segments (12A-12B) and the dielectric element (14) being a circular disc (fig. 1). Therefore, these claims are rejected for the reason as set forth above.

Regarding to claim 10, as noting in fig. 3 and the corresponding description, col. 3, lines 12-56, Rohr discloses an AC source (15) for providing electrical potentials to the stationary plates (12, 13), thereby driving the capacitances, and a measurement circuit responsive to the currents through capacitances, respectively providing an output voltage representing the positions of the dielectric member and the shaft. Accordingly, Baker in view of Rohr obviously discloses the method of sensing position as claimed. Therefore, this claim is rejected for the reason as set forth above.

10. Claims 1-4, 6, 7, 10-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zimmerman et al. (USPN: 6,184,865 B1), hereinafter Zimmerman, and further in view of Rohr.

As per claims 1-4 and 11-13, Zimmerman discloses a capacitive joystick (a capacitive pointing stick as shown in fig. 8A) configured for interconnection to a computer (see abstract), the joystick comprising a housing having a top surface (flexible member (32) (see fig. 8A) and a capacitive position sensor including a conductive cone (22) (corresponding to the claimed signal detecting capacitor plate), a sensing electrode plate (corresponding to the claimed signal transmitting capacitor plate) divided into a plurality of sensing electrodes (30) (corresponding to the claimed electrically separated segments), a dielectric layer (claim 7) (corresponding to the claimed dielectric element), a shaft (24) (corresponding to the claimed elongated member or user graspable joystick lever), an electronic circuitry (see fig. 4) (corresponding to the claimed circuitry), and an output such as a serial port and/or an infrared port including both for outputting the shaft position to the computer (see fig. 4 and col. 6, lines 11-19). Zimmerman further discloses the shaft (24) and the cone movable in a X-Y plane parallel substantially parallel to the

sensing electrode plate (30) without rotation (col. 10, lines 35-40). Accordingly, Zimmerman discloses the claimed subject matter except that instead of the conductive cone (22) (i.e., the claimed signal detecting capacitor plate), the dielectric element moves, as claimed.

However, Rohr discloses a related capacitive device for sensing the rotary position of a rotating shaft, the capacitive device (see fig. 1) comprising a stationary capacitance plate member (13) (corresponding to the claimed stationary signal detecting capacitor plate), a stationary capacitance plate member (12) (corresponding to the claimed stationary signal transmitting capacitor plate) and a dielectric member (14) (corresponding to the claimed dielectric element) and a shaft (10) coupled to the dielectric member to cause the dielectric member (14), instead of the stationary plate (12), movable in a plane substantially parallel to the stationary plates (12 and 14).

It would have been obvious to a person of ordinary skill in the art to utilize Rohr's teaching, i.e., the dielectric member, instead of the stationary plate, movable, in the joystick device of Zimmerman because this would produce a capacitive joystick device having a better linearity, thereby obtaining high precision measurement applications, as taught by Rohr (col. 2, lines 1-2 and lines 24-29). Therefore, it would have been obvious to combine Rohr with Zimmerman to obtain the invention as specified in claims above.

Regarding to claims 6, 7 and 15-17, Zimmerman further discloses four arcuate segments (see figs. 3, 10A and 10B), and Rohr further discloses four arcuate segments (12A-12B) and the dielectric element (14) being a circular disc (fig. 1). Therefore, these claims are rejected for the reason as set forth above.

Regarding to claim 10, as noting in fig. 3 and the corresponding description, col. 3, lines 12-56, Rohr discloses an AC source (15) for providing electrical potentials to the stationary plates (12, 13), thereby driving the capacitances, and a measurement circuit responsive to the currents through capacitances, respectively providing an output voltage representing the positions of the dielectric member and the shaft. Accordingly, Zimmerman in view of Rohr obviously discloses the method of sensing position as claimed. Therefore, this claim is rejected for the reason as set forth above.

Allowable Subject Matter

11. Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: the claimed invention is directed to a capacitive position sensor configured for interconnection to a utilization device such as a computer. The dependent claim 8 identifies the uniquely distinct feature "the position sensor further comprising a pair of assemblies, each including a stationary signal detecting capacitor, a stationary signal transmitting capacitor plate, a dielectric element disposed between plates and an elongate member rotationally coupled to the dielectric element; and wherein the elongated members are supported at right angles to one another to measure the movement of a user in x and y dimensions". The closest arts, Zimmerman, Rohr and Baker, as discussed above, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Conclusion

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13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kasser et al. (USPN: 5,790,107, see fig. 7) and Kawachiya et al. (USPN: 6,208,328 B1, see figs. 10-11), both disclose related capacitive joystick configured for interconnection to a computer.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is (703) 306-5422. The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

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JHN
November 6, 2002

A handwritten signature consisting of stylized initials "JHN" followed by the surname "Nguyen".

JH
Nguyen

Jimmy H. Nguyen
Examiner
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